

combination of the embodiments discussed above may be used without departing from the scope of the invention.

[0091] Thus, the embodiments and examples set forth herein were presented in order to best explain the present invention and its particular application and to thereby enable those skilled in the art to make and use the invention. However, those skilled in the art will recognize that the foregoing description and examples have been presented for the purposes of illustration and example only. The description as set forth is not intended to be exhaustive or to limit the invention to the precise form disclosed. Accordingly, the scope of the invention should be limited only by the attached claims.

What is claimed is:

1. A method for controlling a user interface using an indirect input device, the method comprising:

determining a first touchdown location of an input object; determining a first subsequent location of the input object; calculating a first direction and a first distance between the first touchdown location and the first subsequent location;

moving a cursor representation on a display in a second direction and at a velocity, the second direction defined by the first direction, the velocity based on the first distance and a first force imparted by the input object on an input surface;

detecting a touchdown event of at least two input objects; determining a second touchdown location of the at least two input objects;

determining a second subsequent location of the at least two input objects;

calculating a third direction and a second distance from the second touchdown location and the second subsequent location; and

modulating a user interface action in a fourth direction at a magnitude, wherein the fourth direction is based on the third direction, and wherein the magnitude is based on the second distance and a second force imparted onto the input surface.

2. The method of claim 1, wherein the velocity being based on the first force comprises:

determining whether the first force is greater than a threshold, and

changing the velocity according to a monotonically increasing function of the first force when the first force is greater than the threshold.

3. The method of claim 1, further comprising:

suppressing moving the cursor representation until the first distance is greater than a threshold.

4. The method of claim 1, further comprising:

suppressing moving the cursor representation until the first force is greater than a threshold.

5. The method of claim 1, further comprising:

suppressing moving the cursor representation based on a current graphical user interface context.

6. The method of claim 1, further comprising:

stopping moving the cursor representation when the input object is absent from the input surface.

7. The method of claim 1, further comprising:

stopping moving the cursor representation when the first force is less than a threshold.

8. The method of claim 1, further comprising:

monotonically decreasing the moving of the cursor representation when the input object is absent from the input surface.

9. The method of claim 1, wherein the user interface action comprises at least one selected from a group consisting of scrolling and zooming.

10. The method of claim 1, further comprising:

ceasing the user interface action when at least one of the at least two input objects is absent from the input surface.

11. The method of claim 1, further comprising:

ceasing the user interface action when the second force is less than a threshold.

12. The method of claim 1, further comprising:

monotonically decreasing the modulating of the user interface action when at least one of the at least two input objects is absent from the input surface.

13. The method of claim 1, further comprising:

monotonically decreasing the modulating of the user interface action when the second force is below a threshold.

14. The method of claim 1, further comprising:

continuing to modulate the user interface action after the at least two input objects are absent from the input surface.

15. A processing system for controlling a user interface using an indirect input device, comprising:

a sensor module comprising sensor circuitry coupled to a plurality of sensor electrodes, the sensor module configured to transmit transmitter signals and receive resulting signals with at least a portion of the plurality of sensor electrodes; and

a determination module operatively connected to the plurality of sensor electrodes and configured to:

determine a first touchdown location of an input object, determine a first subsequent location of the input object,

calculate a first direction and a first distance between the first touchdown location and the first subsequent location,

move a cursor representation on a display in a second direction and at a velocity, the second direction defined by the first direction, the velocity based on the first distance and a first force imparted by the input object on the input surface,

detect a touchdown event of at least two input objects, determine a second touchdown location of the at least two input objects,

determine a second subsequent location of the at least two input objects,

calculate a third direction and a second distance from the second touchdown location and the second subsequent location, and

modulate a user interface action in a fourth direction at a magnitude, wherein the fourth direction is based on the third direction, and wherein the magnitude is based on the second distance and a second force imparted onto the input surface.

16. The processing system of claim 15, wherein the determination module is further configured to:

individually determining the second force for each input object of the at least two input objects to obtain at least two individually determined forces, wherein modulat-